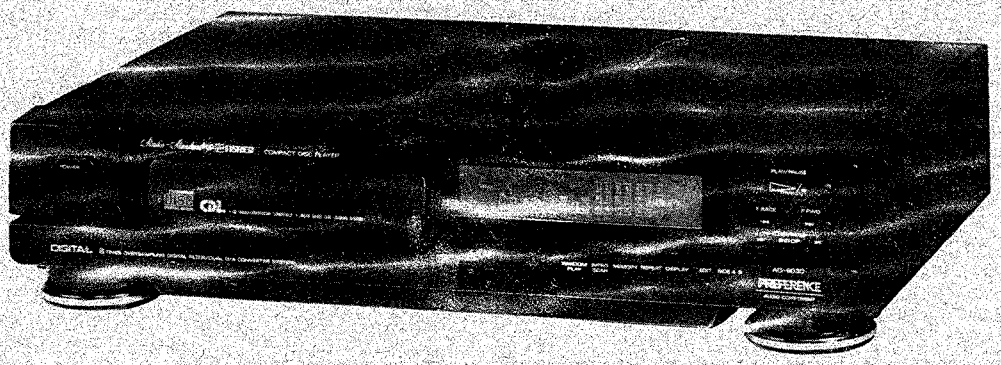
SERVICE MANUAL

FISHER

COMPACT DISC PLAYER

AD-9030

(EUROPE)



137 350 40

SPECIFICATIONS

System ..... Compact disc digital audio
Remote Control (RAD-752) ..... 25-function, wireless remote control

AUDIO CHARACTERISTICS

Frequency Response ..... 20 Hz – 20 kHz ±0.5 dB
Harmonic Distortion ..... Less than 0.005% (1 kHz)
(20kHz Low Pass Filter)
Dynamic Range ..... More than 92 dB
S/N Ratio ..... More than 100 dB
Wow and Flutter ..... Below measurable limits
Channel Separation ..... More than 95 dB (1 kHz)
Output Voltage (maximum) ..... 2 Vrms

FUNCTIONS

Track/Program Selection ..... With FFWD and FBACK buttons
Index Selection ..... With SCAN/INDEX ▶and◀ buttons
Scanning(fast forward/fast back)
Play mode: ..... 2-speed search with sound
Pause mode: ..... 2-speed search without sound
Each/Remain/Total Time Display ..... With DISPLAY button during the PLAY mode

PROGRAM FUNCTIONS

Program Memory ..... 16 selections
Edit Disc Play
Tape Length Selection C-46, C-60, C-90
Display ..... Side AB editing time display
Introscan Play ..... 10 seconds/track
Random Play ..... With the RANDOM PLAY button during the PLAY mode
Repeat Play ..... One track/all tracks/all programmed tracks
Program Reset ..... With STOP button during PROGRAMMED PLAY mode
Pause ..... Each track
Disc Loading ..... Motor-driven horizontal loading

DIGITAL SIGNAL PROCESSING

Optical Pickup ..... 3-beam laser
Sampling Frequency ..... 44.1 kHz
Filters ..... 18-bit, 8 times oversampling digital filter
2-pole active filter
D/A Conversion ..... Two 16-bit, linear, D/A converters

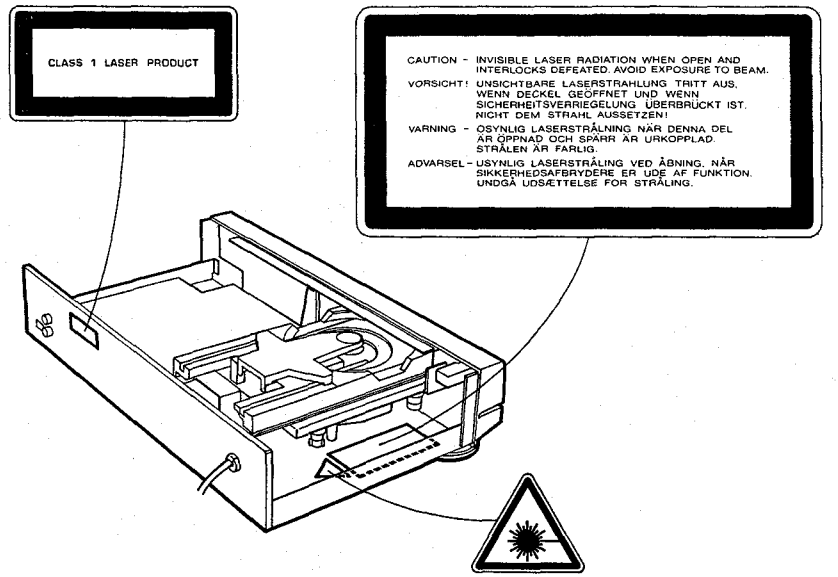
GENERAL

Power Requirements(50 Hz) ..... AC 110/220V
20 Watts
Dimensions (WxHxD) ..... 17.33″ x 3.74″ x 10.87″
Weight (approximate) ..... 8.1 lbs.

– **Specifications and design are subject to change without notice.** –

REFERENCE No. WM-570339

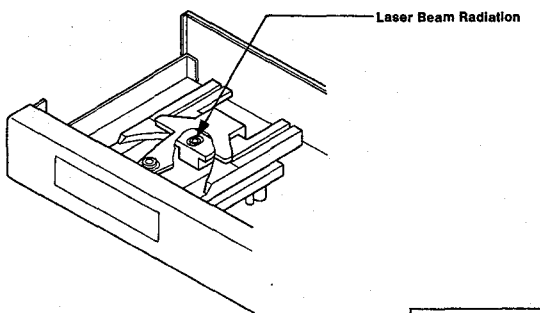
SAFETY CERTIFICATION


CLASS 1 LASER PRODUCT
CAUTION - INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED. AVOID EXPOSURE TO BEAM.
VORSICHT! UNSICHTBARE LASERSTRAHLUNG TRITT AUS, WENN DECKEL GEÖFFNET UND WENN SICHERHEITSVERRIEGELUNG ÜBERBRÜCKT IST. NICHT DEM STRAHL AUSSETZEN!
VARNING - OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRR ÄR URKOPPLAD. STRÅLEN ÄR FARLIG.
ADVARSEL - USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.

CAUTION – USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

THE COMPACT DISC PLAYER SHOULD NOT BE ADJUSTED OR REPAIRED BY ANYONE EXCEPT QUALIFIED SERVICE PERSONNEL.

LASER BEAM RADIATION SPOT

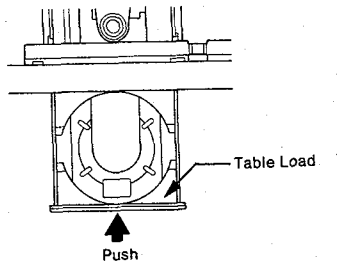


Laser Diode Properties
Material: Ga-Al-As
Wavelength: 755 – 815 nm (25°C)
Laser Output: Continuous Wave max.0.5 mW

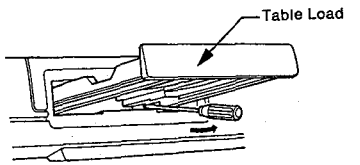
DISASSEMBLY PROCEDURES

REMOVING THE DISC TRAY

1. Apply Power Switch to the set and press the OPEN/CLOSE button to open the table load.
2. Apply OFF the Power Switch while the table load is open, and push the table load back in by hand to close it.

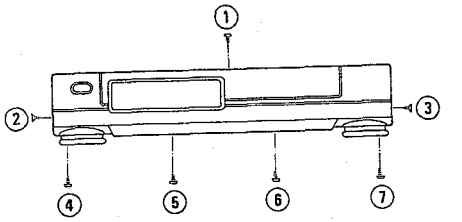


3. Pull out the table load by hand to open it again. The table load will disengage easily and come out smoothly.
4. Now remove the table load from the cabinet while pressing the tab in the direction of the arrow in the diagram below.

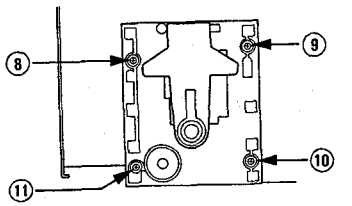


REMOVING THE MECHANISM

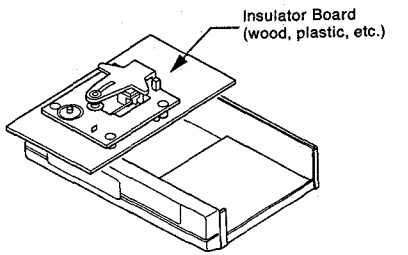
1. Take out the seven screws (1 ~ 7 in the diagram below) with which the Cabinet Front is mounted in place and remove the Cabinet Front.



2. Take out the four screws (8 ~ 11 in the diagram below) with which the mechanism is mounted in place and remove the mechanism.



- The mechanism should be removed with the lead wires still attached, and then placed on a wooden or plastic sheet as shown below to adjust the mechanism.



CD PLAYER ADJUSTMENT PROCEDURES

BEFORE CHECKING OR ADJUSTING CD PLAYER

1. Procedures for all adjustments for the CD player from start to finish are described below.
2. If no problems are found after each item is checked when the pick-up is replaced, there is no need to adjust all items again.

SETTING OF INITIAL POSITION OF VOLUME

1. Set the variable resistors to the initial positions listed below:

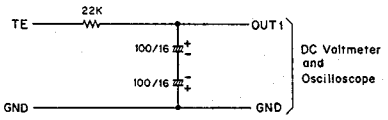
P101 (FOCUS GAIN)	Mechanical Center
P102 (TRACKING GAIN)	Mechanical Center
P103 (E/F BALANCE)	Mechanical Center
P104 (KICK GAIN)	Mechanical Center
P105 (TRACKING OFFSET)	Mechanical Center

FREE RUN FREQUENCY ADJUSTMENT

1. Connect the frequency counter to VCO test terminal (CN11-3) **PCK** test pin and to **GND.** (Use a 10:1 probe.)
2. Short the test terminal (CN12-4) **HF** test pin to **GND.** (Use 0.1μF Capacitor.)
3. Push the POWER button to switch the power on and push the STOP button.
4. Adjust the PLL coil T101 using a plastic screwdriver until the frequency counter indicator reads 4.3218MHz ±5kHz.

E/F BALANCE ADJUSTMENT

1. Place the test disc (Modern Wave Ⅱ) on the Disc Tray, and play the fourth item on the disc. Short the test terminal (CN11-1) **TEST** pin to **GND**, and test terminal (CN12-7) **TROFF** pin to **GND** to turn tracking servo OFF.
2. Connect a DC Voltmeter and an oscilloscope via the low-pass filter like that shown in the illustration below to the test terminal (CN12-6) **TE** (tracking error) pin.



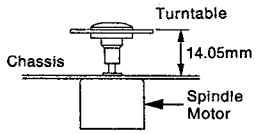
Measurement circuit

3. Adjust P103 so that the DC Voltmeter reading is 0V±50mV (oscilloscope waveform is symmetric to + and − about the zero level).

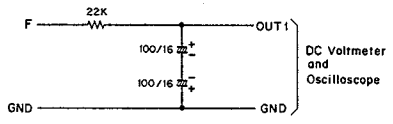
ADJUSTMENT OF TURNTABLE HEIGHT

This adjustment must be performed when the Spindle Motor is replaced.

1. The turntable should be mounted so that its upper surface is 14.05mm±0.1mm above the surface of the chassis.



2. Place the test disc (Modern Wave Ⅱ) on the turntable.
3. Connect a DC Voltmeter and an oscilloscope via the low-pass filter shown below to test terminal (CN13-5) **F** (focus coil) pin.



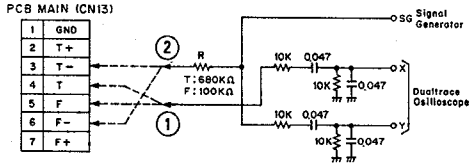
Measurement circuit

4. Push the POWER button to switch the power on and PLAY the First and Last Track No. on the disc.
5. If the DC Voltmeter reading is not in the ranges 0V±0.2V for inner tracks and 0V±0.35V for outer tracks, then the turntable height must be readjusted. Raise the turntable higher if the DC Voltmeter indicator is on the plus (+) side, and lower it if it is on the minus (−) side.
(With this circuit 1V represents movement of approximately 0.55mm ~ 0.65mm.)

CD PLAYER ADJUSTMENT PROCEDURES (Continued)

ADJUSTMENT OF FOCUS/TRACKING GAIN

The measurement circuit diagrammed below must be used in order to adjust focus gain and tracking gain correctly.



FOCUS GAIN ADJUSTMENT

1. Apply P101 to the position of Mechanical center position, and place the test disc (Modern Wave Ⅱ) on the Disc Tray.
2. Connect the measurement circuit described in the last section to the test terminal (CN13-5) **F** (focus coil) pin and (CN13-6) **F** − (minus) pin. (Use 100kΩ Resistor.)
3. Push the POWER button to switch the power on and PLAY the first item on the test disc. Now apply a signal of 850Hz and 0.8Vp-p from the signal generator to the measurement circuit.
4. Set the oscilloscope to X-Y operation, and while observing the lissajous waveform adjust P101 to the point where the phase difference is 90° as shown in Fig. 1 below.

Fig.1

TRACKING GAIN ADJUSTMENT

1. Apply P102 to the position of Mechanical center position, and place the test disc (Modern Wave Ⅱ) on the Disc Tray.
2. Connect the measurement circuit described in the last section to the test terminal (CN13-4) **T** (tracking coil) pin and (CN13-3) **T** − (minus) pin (Use 680kΩ Resistor.)
3. Push the POWER button to switch the power on and PLAY the first item on the test disc. Now apply a signal of 850Hz and 0.8Vp-p from the signal generator to the measurement circuit.
4. Set the oscilloscope to X-Y operation, and while observing the lissajous waveform adjust P102 to the point where the phase difference is 90° as shown in Fig. 1 above.

NOTE:
If these two adjustments are performed, the TRACKING OFFSET must also be adjusted.

TRACKING OFFSET ADJUSTMENT

1. Push the POWER button to switch the power on and push the STOP button.
2. Connect a DC Voltmeter to the test terminal (CN13-4) **TC** (tracking coil) pin and short the test terminal (CN12-2) **TOF** pin to **GND.**
3. In this condition check that the DC Voltmeter indicator is in the range 150mV±20mV, and adjust P105 if it is not.

NOTE:
Perform this adjustment once again after adjusting the E/F BALANCE and TRACKING GAIN signals.

KICK GAIN ADJUSTMENT

1. Place the test disc (Modern Wave Ⅱ) on the Disc Tray.
2. Set the oscilloscope to NORMAL TRIG., set the EXT. TRIG. pin to external trigger, and input the trigger from test terminal (CN11-4) **THLD** pin to the oscilloscope.
3. Next connect test terminal (CN12-4) **HF** pin to Channel 1 of the oscilloscope, and connect test terminal (CN12-6) **TE** pin to Channel 2.
4. Push the POWER button to switch the power on and PLAY the first item on the test disc, and the push the PAUSE button. Now observe the waveforms for **HF** and **TE** with triggers applied from test terminal (CN11-4) **THLD** pin. At this point, adjust P104 so that a kick pulse waveform of about 1 to 1.3 tracks as shown in Fig. 2 below is obtained.

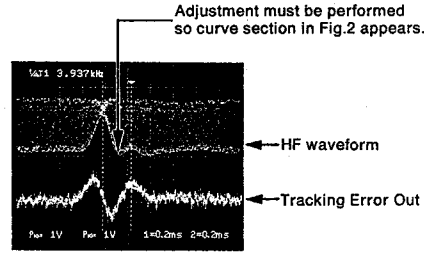
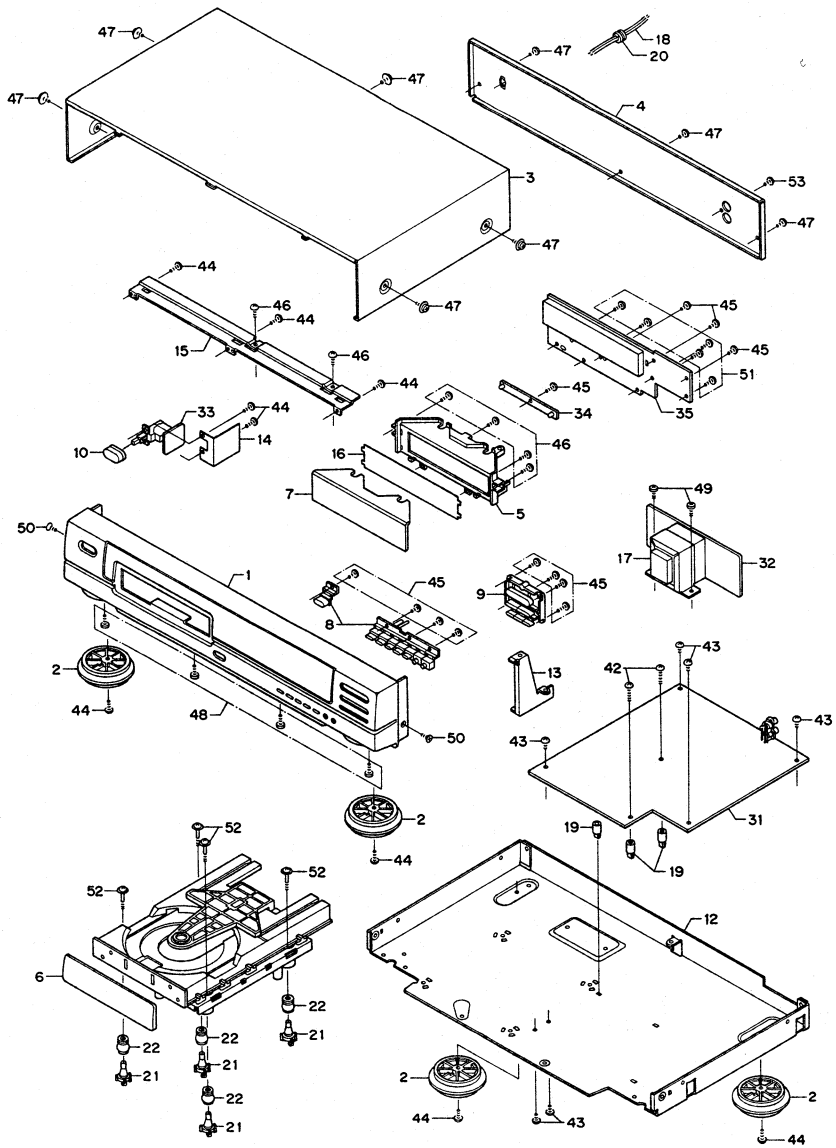


Fig. 2

CABINET & CHASSIS EXPLODED VIEW



CABINET & CHASSIS PARTS LIST

Ref. No.	Part No.	Description	Q'ty
PACKAGE			
	620 201 7556	Inner Carton	1
	620 198 7225	Pad,Top	1
	620 198 7232	Pad,Bottom	1
	620 202 6701	Reinforcement	2
	620 059 6596	Patching Sheet	1
	620 148 8012	Sheet Polyethylene	
ACCESSORIES			
	620 017 7955	Connector 4P Assy	1
	620 201 9895	Instruction Manual	1
	620 037 3500	RCA Cord 1000mm Black	1
or	620 021 7408	RCA Cord 1000mm Black	1
	620 057 8783	Bag Fan	1
	620 152 2624	Certificate Card	1
	620 152 7452	Serial No. Sheet	1
CABINET			
	620 061 2340	Notes (Laser)	1
	620 061 2401	Notes (Laser)	1
	620 061 2418	Notes (Laser)	1
	620 125 8424	Wire Band	6
	620 152 7452	Serial No. Sheet	2
	620 188 6191	Connector 9P Assy [CN3W]	1
1	620 201 7525	Assy,Cabinet,Front	1
2	620 198 6969	Assy,Foot	4
3	620 198 0639	Cover	1
4	620 201 7518	Panel,Rear	1
5	620 198 0585	Panel,Meter	1
6	620 198 0608	Panel,Tray	1
7	620 198 0578	Window,Meter	1
8	620 198 0554	Button,Mode	1
9	620 198 0561	Button,Select	1
10	620 198 0622	Button,Power	1
12	620 198 0646	Chassis,Main	1
13	620 198 0660	Support,Front	1
14	620 201 7112	Shield,Power Switch	1
15	620 198 0684	Reinforcement,Front	1
16	620 198 7201	Filter	1
17	620 201 7228	Power Trans,SEV,10VA	1
18	⚠ 620 023 7550	Power Cord	1
19	620 050 4409	Mount P.C.B.	3
20	620 053 2129	Bushing (Power Cord)	1
or	620 053 2136	Bushing (Power Cord)	1
21	620 115 4375	Holder Mecha	4
22	620 124 3437	Cushion Rubber	4

Ref. No.	Part No.	Description	Q'ty
31	620 201 7242	Assy,PCB,Main-BB	1
32	620 201 7259	Assy,PCB,Trans	1
33	620 201 3695	Assy,PCB,Switch,Power	1
34	620 200 0718	Assy,PCB,Lamp	1
35	620 200 0749	Assy,PCB,Display	1
42	411 020 7007	SCR S-TPG BRZ 3X20	2
43	411 020 7700	SCR S-TPG BRZ 3X6	6
44	411 020 8004	SCR S-TPG BRZ 3X8	9
45	411 021 1202	SCR S-TPG BIN 2X8	12
46	411 021 3107	SCR S-TPG BIN 2.6X8	6
47	411 021 5903	SCR S-TPG BIN 3X6	8
48	411 021 6603	SCR S-TPG BIN 3X8	4
49	411 021 9109	SCR S-TPG BIN 4X6	2
50	411 022 4608	SCR S-TPG FLT 3X8	2
51	411 023 3303	SCR S-TPG PAN 2.6X8	5
52	412 024 6300	SPECIAL SCREW	4
53	412 034 8509	SPECIAL SCREW	1

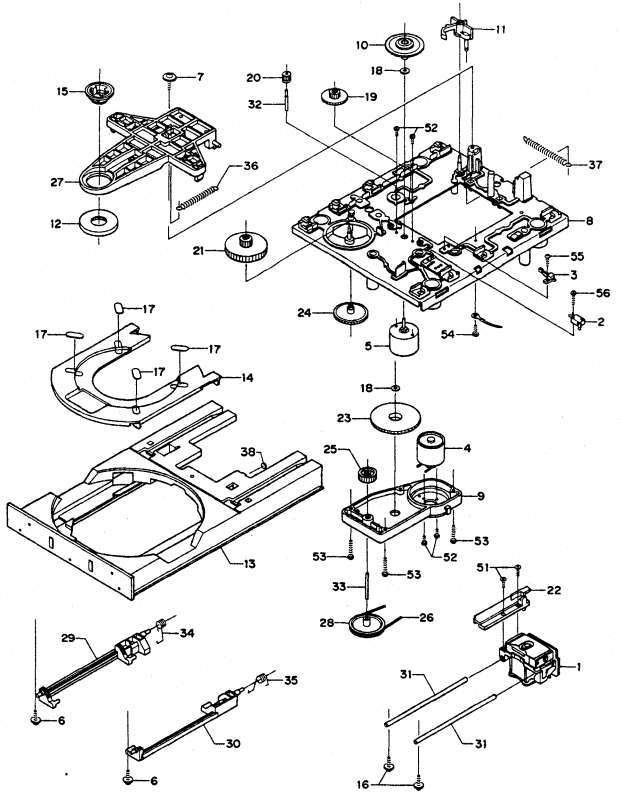
NOTES:

1. Parts order must contain Model Number, Part Number and Description.
2. Ordering quantity of screws and resistors must be multiple of 10 pcs.

PRODUCT SAFETY NOTICE

Each precaution in this manual should be followed during servicing. Components identified with the IEC symbol ⚠ in the parts list and the schematic diagram designate components in which safety can be of special significance. When replacing a component identified with ⚠, use only the replacement parts designated, or parts with the same ratings of resistance, wattage or voltage that are designated in the parts list in this manual. Leakage-current or resistance measurements must be made to determine that exposed parts are acceptably insulated from the supply circuit before returning the product to the customer.

MECHANISM PARTS LIST/EXPLODED VIEW



Ref. No.	Part No.	Description	Q'ty
MECHANISM			
	620 202 7210	Label,Identification	1
	620 125 8424	Wire Band	2
1	620 062 6170	Pick-up Assy 88	1
2	620 015 3744	Lever Switch 1P1T (Lid Open)	1
3	620 016 2401	Leaf Switch (Pick-up Inner)	1
4	620 189 0426	Motor (Sled Motor)	1
5	620 189 0433	Motor (Spindle Motor)	1
6	620 051 4279	Screw 3X8	2
7	620 051 4316	Screw 3X10	1
8	620 081 5963	Chassis Assy	1
9	620 185 9898	Chassis Sub Assy	1
10	620 082 7478	Turntable Assy	1
11	620 083 3974	Arm Assy	1
12	620 085 6553	Magnet Assy	1
13	620 190 6547	Table Load	1
14	620 185 9911	Table CD	1
15	620 119 1530	Holder Disc	1
16	620 123 0772	Screw Washer 2.6X6	1
17	620 184 9905	Pad Disc (Felt)	2
18	620 125 1487	Washer M1.9X7.0X0.25	4
19	620 127 9429	Gear Pick-up	2
20	620 127 9436	Gear Motor	1
21	620 127 9467	Gear Table Load	1
22	620 127 9474	Gear Pick-up Rack	1
23	620 185 9973	Gear Load Pick-up	1
24	620 185 9980	Gear Load T.L	1

Ref. No.	Part No.	Description	Q'ty
25	620 185 9997	Gear	1
26	620 186 0009	Belt	1
27	620 129 5986	Flap Disc Cramp	1
28	620 186 0023	Pulley	1
29	620 186 0030	Lever Hold Disc Left	1
30	620 186 0047	Lever Hold Disc Right	1
31	620 133 4081	Shaft Pick-up	2
32	620 133 4098	Shaft Gear S	1
33	620 186 0054	Shaft Pulley	1
34	620 186 0061	Spring Lever Left	1
35	620 186 0078	Spring Lever Right	1
36	620 139 1558	Spring Flap Disc CR	1
37	620 139 1565	Spring Arm	1
38	620 202 7203	Spacer	1
51	411 108 0104	SCR FLT PCS 2X5	2
52	411 099 0701	SCR PAN PCS 1.7X3	4
53	411 020 5409	SCR S-TPG BRZ 2.6X14	3
54	411 020 7700	SCR S-TPG BRZ 3X6	1
55	411 022 7807	SCR S-TPG PAN 2X6	1
56	411 104 6605	SCR TPG PAN 1.7X10	1

NOTES:

1. Parts order must contain Model Number, Part Number and Description.
2. Ordering quantity of screws and resistors must be multiple of 10 pcs.

P.C.BOARD PARTS LIST

Ref. No.	Part No.	Description	Q'ty
ASSY,PCB,MAIN-BB			
31	620 201 7242	Assy,PCB,Main-BB	1
	620 190 1092	Pin Jack 2P WH/RED	1
	620 053 9562	Plate Heatsink	2
CN1	620 021 8337	Plug 6P	1
CN2	620 021 8610	Plug 6P	1
CN3	620 021 9976	Plug 9P	1
CN5	620 021 6555	Plug 4P	1
CN6	620 021 8405	Plug 8P	1
CN7	620 021 8344	Plug 10P	1
CN8	620 022 0132	Plug 12P	1
CN9	620 021 5954	Plug 6P	1
CN10	620 021 5954	Plug 6P	1
CN11	620 021 5589	Plug 5P	1
CN12	620 021 4377	Plug 7P	1
CN13	620 021 4377	Plug 7P	1
P101	620 006 1940	Potentiometer 10KB (F-Gain)	1
P102	620 006 1957	Potentiometer 20KB (T-Gain)	1
P103	620 006 1933	Potentiometer 100KB (E/F Balance)	1
P104	620 006 1933	Potentiometer 100KB (Kick-Gain)	1
P105	620 006 1957	Potentiometer 20KB (T-Offset)	1
RB101	620 190 4062	Resistor 10X10K	1
RB102	620 190 4062	Resistor 10X10K	1
T101	620 028 8699	OSC Coil	1
or	620 028 8774	OSC Coil	1
X101	620 007 3172	Crystal 8.6436MHz	1
or	620 182 6999	Crystal 8.6436MHz	1
X102	620 189 5117	Ceramic OSC 6MHz	1
IC101	409 124 6507	IC LA9200NM	1
IC102	409 168 1308	IC LC7860J	1
IC103	409 123 7109	IC LC3517BS-15	1
IC104	409 018 5104	IC LA6458SS	1
or	409 057 4601	IC UPC4570HA	1
IC105	409 136 9206	IC FA5205P	1
IC106	409 203 8507	IC M50954-125SP	1
IC107	409 195 4105	IC M5294P	1
IC108	409 022 0904	IC LC74HC00	1
IC109	409 195 4204	IC PD0050	1
IC110	409 070 7009	IC PCM56P	1
IC111	409 070 7009	IC PCM56P	1
IC112	409 018 5104	IC LA6458SS	1
or	409 057 4601	IC UPC4570HA	1
IC113	409 018 5104	IC LA6458SS	1
or	409 057 4601	IC UPC4570HA	1
Q101	405 019 2807	TR 2SC536-F-SPA-AC	1
or	405 019 3903	TR 2SC536-G-SPA-AC	1
Q102	405 021 0204	TR 2SD1012-F-SPA-AC	1
or	405 021 0600	TR 2SD1012-G-SPA-AC	1
Q103	405 004 4007	TR 2SA608-E-SPA-AC	1
or	405 004 4601	TR 2SA608-F-SPA-AC	1
Q104	405 004 4007	TR 2SA608-E-SPA-AC	1
or	405 004 4601	TR 2SA608-F-SPA-AC	1
Q106	405 018 2600	TR 2SC3400-AC	1
Q107	405 004 4007	TR 2SA608-E-SPA-AC	1
or	405 004 4601	TR 2SA608-F-SPA-AC	1
Q108	405 019 3903	TR 2SC536-G-SPA-AC	1
Q109	405 019 3903	TR 2SC536-G-SPA-AC	1
Q110	405 021 0907	TR 2SD1012-H-SPA-AC	1
or	405 021 0600	TR 2SD1012-G-SPA-AC	1
Q111	405 021 0907	TR 2SD1012-H-SPA-AC	1
or	405 021 0600	TR 2SD1012-G-SPA-AC	1
Q112	405 018 2600	TR 2SC3400-AC	1
Q113	405 004 4007	TR 2SA608-E-SPA-AC	1
or	405 004 4601	TR 2SA608-F-SPA-AC	1
Q114	405 024 9709	TR 2SD734-E	1
or	405 024 9907	TR 2SD734-F	1
Q115	405 024 9709	TR 2SD734-E	1
or	405 024 9907	TR 2SD734-F	1
D101	407 000 3503	VARACTOR DI SVC211SP	1
D102	407 008 0405	DIODE GMB01-BT	1
D103	407 008 0405	DIODE GMB01-BT	1
D104	407 008 0405	DIODE GMB01-BT	1
D105	407 008 0405	DIODE GMB01-BT	1
D106	407 008 0405	DIODE GMB01-BT	1
D107	407 008 0405	DIODE GMB01-BT	1
D108	407 008 0405	DIODE GMB01-BT	1
D109	407 008 0405	DIODE GMB01-BT	1
D110	407 008 0405	DIODE GMB01-BT	1
D111	407 008 0405	DIODE GMB01-BT	1

Ref. No.	Part No.	Description	Q'ty
D112	407 008 0405	DIODE GMB01-BT	1
D113	407 008 0405	DIODE GMB01-BT	1
D114	407 008 0405	DIODE GMB01-BT	1
D115	407 008 0405	DIODE GMB01-BT	1
D116	407 008 0405	DIODE GMB01-BT	1
D117	407 050 0200	ZENER DIODE GZA24Z	1
D118	407 050 5502	ZENER DIODE GZA5.6Y-BT	1
D119	407 005 8602	DIODE ERA15-02	1
D120	407 005 8602	DIODE ERA15-02	1
D121	407 005 8602	DIODE ERA15-02	1
D122	407 005 8602	DIODE ERA15-02	1
D123	407 005 8602	DIODE ERA15-02	1
D124	407 005 8602	DIODE ERA15-02	1
D125	407 005 8602	DIODE ERA15-02	1
C101	403 009 1809	CERAMIC 10P J 50V	1
C102	403 015 1602	CERAMIC 2P C 50V	1
C103	403 030 6309	CERAMIC 68P J 50V	1
C104	403 030 6309	CERAMIC 68P J 50V	1
C105	403 071 2001	CERAMIC 180P K 50V	1
C106	403 086 1907	NP-ELECT 0.47U M 50V	1
C107	403 003 8705	CERAMIC 0.039U K 25V	1
C108	403 071 6207	CERAMIC 220P K 50V	1
C109	403 087 2507	STYRENE 1000P J 50V	1
C110	403 001 1906	CERAMIC 0.01U M 16V	1
C111	404 028 9302	CERAMIC 0.1U Z 50V	1
C112	403 001 1906	CERAMIC 0.01U M 16V	1
C113	403 088 7105	STYRENE 680P J 50V	1
C114	403 067 5603	MT-COMPO 0.1U J 50V	1
C115	403 003 6701	CERAMIC 0.033U K 25V	1
C116	403 009 1809	CERAMIC 10P J 50V	1
C117	404 028 9302	CERAMIC 0.1U Z 50V	1
C118	403 042 0302	ELECT 10U M 16V	1
C119	403 042 0302	ELECT 10U M 16V	1
C120	403 022 7703	CERAMIC 33P J 50V	1
C121	403 022 7703	CERAMIC 33P J 50V	1
C122	404 028 9302	CERAMIC 0.1U Z 50V	1
C124	403 001 1906	CERAMIC 0.01U M 16V	1
C125	403 069 1207	CERAMIC 1000P K 50V	1
C126	403 067 6204	MT-COMPO 0.15U J 50V	1
C127	403 086 1402	NP-ELECT 0.22U M 50V	1
C128	403 086 1600	NP-ELECT 0.33U M 50V	1
C129	403 039 2906	ELECT 47U M 6.3V	1
C130	403 067 5603	MT-COMPO 0.1U J 50V	1
C131	403 059 6205	POLYESTER 0.022U K 50V	1
C132	403 067 5603	MT-COMPO 0.1U J 50V	1
C133	403 049 1609	ELECT 1U M 50V	1
C134	403 159 7201	NP-ELECT 1U M 50V	1
or	403 086 2706	NP-ELECT 1U M 50V	1
C135	403 042 0302	ELECT 10U M 16V	1
C136	403 073 7004	CERAMIC 470P K 50V	1
C137	403 073 7004	CERAMIC 470P K 50V	1
C138	404 028 9302	CERAMIC 0.1U Z 50V	1
C139	404 028 9302	CERAMIC 0.1U Z 50V	1
C140	403 009 1809	CERAMIC 10P J 50V	1
C141	403 071 6207	CERAMIC 220P K 50V	1
C142	403 159 7201	NP-ELECT 1U M 50V	1
or	403 086 2706	NP-ELECT 1U M 50V	1
C143	403 159 7201	NP-ELECT 1U M 50V	1
or	403 086 2706	NP-ELECT 1U M 50V	1
C144	403 071 7501	CERAMIC 2200P K 50V	1
C145	403 071 7501	CERAMIC 2200P K 50V	1
C146	403 002 6207	CERAMIC 0.012U K 25V	1
C147	403 002 6207	CERAMIC 0.012U K 25V	1
C148	403 159 7201	NP-ELECT 1U M 50V	1
or	403 086 2706	NP-ELECT 1U M 50V	1
C149	403 042 0302	ELECT 10U M 16V	1
C150	403 042 0302	ELECT 10U M 16V	1
C151	403 001 1906	CERAMIC 0.01U M 16V	1
C152	404 028 9302	CERAMIC 0.1U Z 50V	1
C154	403 073 7004	CERAMIC 470P K 50V	1
C155	403 073 7004	CERAMIC 470P K 50V	1
C156	403 073 7004	CERAMIC 470P K 50V	1
C157	403 073 7004	CERAMIC 470P K 50V	1
C158	404 028 9302	CERAMIC 0.1U Z 50V	1
C159	403 072 2703	CERAMIC 0.022U Z 50V	1
C160	403 069 1207	CERAMIC 1000P K 50V	1
C161	404 028 9302	CERAMIC 0.1U Z 50V	1
C162	403 039 2906	ELECT 47U M 6.3V	1
C163	403 159 7201	NP-ELECT 1U M 50V	1

P.C.BOARD PARTS LIST (Continued)

Ref. No.	Part No.	Description	Q'ty
or	403 086 2706	NP-ELECT 1U M 50V	1
C164	403 159 7201	NP-ELECT 1U M 50V	1
or	403 086 2706	NP-ELECT 1U M 50V	1
C165	403 068 9402	CERAMIC 100P K 50V	1
C166	403 001 1906	CERAMIC 0.01U M 16V	1
C167	404 028 9302	CERAMIC 0.1U Z 50V	1
C168	403 039 2906	ELECT 47U M 6.3V	1
C169	403 019 9703	CERAMIC 27P J 50V	1
C170	403 019 9703	CERAMIC 27P J 50V	1
C171	404 028 9302	CERAMIC 0.1U Z 50V	1
C172	404 028 9302	CERAMIC 0.1U Z 50V	1
C173	404 028 9302	CERAMIC 0.1U Z 50V	1
C174	404 028 9302	CERAMIC 0.1U Z 50V	1
C175	404 028 9302	CERAMIC 0.1U Z 50V	1
C176	404 028 9302	CERAMIC 0.1U Z 50V	1
C177	403 057 0601	POLYESTER 0.01U K 50V	1
C178	403 057 0601	POLYESTER 0.01U K 50V	1
C179	403 058 1300	POLYESTER 1500P K 50V	1
C180	403 058 1300	POLYESTER 1500P K 50V	1
C181	403 026 2209	CERAMIC 47P J 50V	1
C182	403 026 2209	CERAMIC 47P J 50V	1
C183	403 088 7105	STYRENE 680P J 50V	1
C184	403 088 7105	STYRENE 680P J 50V	1
C185	403 158 3600	NP-ELECT 4.7U M 16V	1
or	403 085 6408	NP-ELECT 4.7U M 16V	1
C186	403 158 3600	NP-ELECT 4.7U M 16V	1
or	403 085 6408	NP-ELECT 4.7U M 16V	1
C187	404 028 9302	CERAMIC 0.1U Z 50V	1
C188	404 028 9302	CERAMIC 0.1U Z 50V	1
C189	403 038 7209	ELECT 220U M 6.3V	1
C190	403 039 2906	ELECT 47U M 6.3V	1
C191	403 001 1906	CERAMIC 0.01U M 16V	1
C192	403 069 1207	CERAMIC 1000P K 50V	1
C193	403 073 7004	CERAMIC 470P K 50V	1
C194	403 073 7004	CERAMIC 470P K 50V	1
C197	403 042 0302	ELECT 10U M 16V	1
C198	403 042 0302	ELECT 10U M 16V	1
C200	403 042 0302	ELECT 10U M 16V	1
C203	403 039 2906	ELECT 47U M 6.3V	1
C204	403 038 7209	ELECT 220U M 6.3V	1
C205	403 047 1502	ELECT 4.7U M 25V	1
C206	403 049 1609	ELECT 1U M 50V	1
C207	403 042 0302	ELECT 10U M 16V	1
C208	403 069 1207	CERAMIC 1000P K 50V	1
C209	403 044 0300	ELECT 47U M 16V	1
C210	403 044 0300	ELECT 47U M 16V	1
C211	403 043 3104	ELECT 2200U M 16V	1
C212	403 043 3104	ELECT 2200U M 16V	1
C213	403 054 1304	ELECT 47U M 35V	1
C214	403 054 1304	ELECT 47U M 35V	1
C215	403 054 1304	ELECT 47U M 35V	1
C216	403 054 1304	ELECT 47U M 35V	1
C217	403 054 1304	ELECT 47U M 35V	1
C218	403 072 2703	CERAMIC 0.022U Z 50V	1
C219	403 072 2703	CERAMIC 0.022U Z 50V	1
C220	403 072 2703	CERAMIC 0.022U Z 50V	1
C221	404 028 9302	CERAMIC 0.1U Z 50V	1
C222	404 028 9302	CERAMIC 0.1U Z 50V	1
R101	401 026 0003	CARBON 24K JA 1/6W	1
R102	401 024 7400	CARBON 10K JA 1/6W	1
R103	401 024 7400	CARBON 10K JA 1/6W	1
R104	401 027 2600	CARBON 5.6K JA 1/6W	1
R105	401 024 6700	CARBON 100 JA 1/6W	1
R106	401 025 7409	CARBON 220 JA 1/6W	1
R107	401 027 9005	CARBON 82K JA 1/6W	1
R108	401 024 7707	CARBON 100K JA 1/6W	1
R109	401 024 7707	CARBON 100K JA 1/6W	1
R110	401 026 9907	CARBON 4.7K JA 1/6W	1
R111	401 026 4308	CARBON 3.3K JA 1/6W	1
R112	401 025 7409	CARBON 220 JA 1/6W	1
R113	401 025 8208	CARBON 22K JA 1/6W	1
R114	401 024 7004	CARBON 1K JA 1/6W	1
R115	401 025 1902	CARBON 15K JA 1/6W	1
R116	401 025 7805	CARBON 2.2K JA 1/6W	1
R117	401 025 8208	CARBON 22K JA 1/6W	1
R118	401 025 8208	CARBON 22K JA 1/6W	1
R119	401 024 7707	CARBON 100K JA 1/6W	1
R120	401 024 7707	CARBON 100K JA 1/6W	1
R121	401 024 7400	CARBON 10K JA 1/6W	1
R122	401 025 2305	CARBON 150K JA 1/6W	1
R123	401 024 7707	CARBON 100K JA 1/6W	1
R124	401 025 7805	CARBON 2.2K JA 1/6W	1
R125	401 026 0607	CARBON 270 JA 1/6W	1
R126	401 025 8703	CARBON 220K JA 1/6W	1
R127	401 024 9701	CARBON 12K JA 1/6W	1
R128	401 026 7408	CARBON 39K JA 1/6W	1
R129	401 026 7408	CARBON 39K JA 1/6W	1
R130	401 025 1902	CARBON 15K JA 1/6W	1
R131	401 025 8703	CARBON 220K JA 1/6W	1
R132	401 024 7400	CARBON 10K JA 1/6W	1
R133	401 026 1604	CARBON 270K JA 1/6W	1
R134	401 026 1604	CARBON 270K JA 1/6W	1
R135	401 025 2305	CARBON 150K JA 1/6W	1
R136	401 012 4503	CARBON 100 JA 1/4W	1
R137	401 025 8208	CARBON 22K JA 1/6W	1
R138	401 016 4806	CARBON 22K JA 1/4W	1
R139	401 016 4806	CARBON 22K JA 1/4W	1
R140	401 025 9007	CARBON 2.2M JA 1/6W	1
R141	401 025 8208	CARBON 22K JA 1/6W	1
R142	401 028 0308	CARBON 91K JA 1/6W	1
R143	401 026 4308	CARBON 3.3K JA 1/6W	1
R144	401 025 4903	CARBON 180K JA 1/6W	1
R145	401 027 0309	CARBON 47K JA 1/6W	1
R146	401 025 4903	CARBON 180K JA 1/6W	1
R147	401 024 7707	CARBON 100K JA 1/6W	1
R148	401 024 7707	CARBON 100K JA 1/6W	1
R149	401 016 4806	CARBON 22K JA 1/4W	1
R150	401 025 8208	CARBON 22K JA 1/6W	1
R151	401 027 0309	CARBON 47K JA 1/6W	1
R152	401 027 9005	CARBON 82K JA 1/6W	1
R153	401 025 0004	CARBON 120K JA 1/6W	1
R154	401 026 1604	CARBON 270K JA 1/6W	1
R155	401 025 0004	CARBON 120K JA 1/6W	1
R156	401 025 4903	CARBON 180K JA 1/6W	1
R157	401 026 1307	CARBON 27K JA 1/6W	1
R158	401 024 7004	CARBON 1K JA 1/6W	1
R159	401 024 7400	CARBON 10K JA 1/6W	1
R160	401 026 1307	CARBON 27K JA 1/6W	1
R161	401 024 6403	CARBON 10 JA 1/6W	1
R162	401 025 5405	CARBON 2.2 JA 1/6W	1
R163	401 024 6403	CARBON 10 JA 1/6W	1
R164	401 026 1307	CARBON 27K JA 1/6W	1
R165	401 026 4902	CARBON 330K JA 1/6W	1
R166	401 024 7400	CARBON 10K JA 1/6W	1
R167	401 027 0309	CARBON 47K JA 1/6W	1
R168	401 027 5205	CARBON 680 JA 1/6W	1
R169	401 025 5405	CARBON 2.2 JA 1/6W	1
R170	401 027 3003	CARBON 56K JA 1/6W	1
R171	401 021 5003	CARBON 560K JA 1/4W	1
R172	401 021 5003	CARBON 560K JA 1/4W	1
R173	401 025 5405	CARBON 2.2 JA 1/6W	1
R174	401 025 4200	CARBON 1.8K JA 1/6W	1
R175	401 025 3807	CARBON 180 JA 1/6W	1
R176	401 024 9701	CARBON 12K JA 1/6W	1
R177	401 024 9701	CARBON 12K JA 1/6W	1
R178	401 024 5604	CARBON 1 JA 1/6W	1
R179	401 027 0309	CARBON 47K JA 1/6W	1
R180	401 027 0309	CARBON 47K JA 1/6W	1
R181	401 026 4605	CARBON 33K JA 1/6W	1
R182	401 026 4605	CARBON 33K JA 1/6W	1
R183	401 012 8105	CARBON 100K JA 1/4W	1
R184	401 012 8105	CARBON 100K JA 1/4W	1
R185	401 026 4605	CARBON 33K JA 1/6W	1
R186	401 026 1307	CARBON 27K JA 1/6W	1
R187	401 025 4903	CARBON 180K JA 1/6W	1
R188	401 025 6709	CARBON 200K JA 1/6W	1
R189	401 026 1000	CARBON 2.7K JA 1/6W	1
R190	401 024 7400	CARBON 10K JA 1/6W	1
R191	401 026 4308	CARBON 3.3K JA 1/6W	1
R192	401 027 0309	CARBON 47K JA 1/6W	1
R193	401 016 3809	CARBON 2.2K JA 1/4W	1
R194	401 024 8001	CARBON 1M JA 1/6W	1
R196	401 024 7707	CARBON 100K JA 1/6W	1
R197	401 024 7707	CARBON 100K JA 1/6W	1
R198	401 024 7707	CARBON 100K JA 1/6W	1
R199	401 024 7707	CARBON 100K JA 1/6W	1
R200	401 020 2904	CARBON 47K JA 1/4W	1
R201	401 027 2303	CARBON 560 JA 1/6W	1

P.C.BOARD PARTS LIST (Continued)

Ref. No.	Part No.	Description	Q'ty
R202	401 027 2303	CARBON 560 JA 1/6W	1
R203	401 024 7400	CARBON 10K JA 1/6W	1
R204	401 024 8001	CARBON 1M JA 1/6W	1
R205	401 024 6700	CARBON 100 JA 1/6W	1
R206	401 027 2303	CARBON 560 JA 1/6W	1
R207	401 027 2303	CARBON 560 JA 1/6W	1
R208	401 027 2303	CARBON 560 JA 1/6W	1
R209	401 016 2604	CARBON 220 JA 1/4W	1
R210	401 019 1000	CARBON 390 JA 1/4W	1
R211	401 016 2604	CARBON 220 JA 1/4W	1
R212	401 016 2604	CARBON 220 JA 1/4W	1
R213	401 024 6403	CARBON 10 JA 1/6W	1
R214	401 024 6403	CARBON 10 JA 1/6W	1
R215	401 024 6403	CARBON 10 JA 1/6W	1
R216	401 024 6403	CARBON 10 JA 1/6W	1
R217	401 025 1605	CARBON 1.5K JA 1/6W	1
R218	401 025 1605	CARBON 1.5K JA 1/6W	1
R219	401 025 1605	CARBON 1.5K JA 1/6W	1
R220	401 025 1605	CARBON 1.5K JA 1/6W	1
R221	401 025 1605	CARBON 1.5K JA 1/6W	1
R222	401 025 1605	CARBON 1.5K JA 1/6W	1
R223	401 027 0309	CARBON 47K JA 1/6W	1
R224	401 027 0309	CARBON 47K JA 1/6W	1
R225	401 027 1801	CARBON 51K JA 1/6W	1
R226	401 027 1801	CARBON 51K JA 1/6W	1
R227	401 025 8208	CARBON 22K JA 1/6W	1
R228	401 025 8208	CARBON 22K JA 1/6W	1
R229	401 024 8001	CARBON 1M JA 1/6W	1
R230	401 024 8001	CARBON 1M JA 1/6W	1
R231	401 027 0309	CARBON 47K JA 1/6W	1
R232	401 027 0309	CARBON 47K JA 1/6W	1
R233	401 025 7805	CARBON 2.2K JA 1/6W	1
R234	401 025 7805	CARBON 2.2K JA 1/6W	1
R235	401 025 7805	CARBON 2.2K JA 1/6W	1
R236	401 025 7805	CARBON 2.2K JA 1/6W	1
R237	401 027 5502	CARBON 6.8K JA 1/6W	1
R238	401 027 5502	CARBON 6.8K JA 1/6W	1
R239	401 021 5003	CARBON 560K JA 1/4W	1
R240	401 024 7400	CARBON 10K JA 1/6W	1
R241	401 026 4308	CARBON 3.3K JA 1/6W	1
R243	401 024 7707	CARBON 100K JA 1/6W	1
R244	401 024 7400	CARBON 10K JA 1/6W	1
R245	401 026 4308	CARBON 3.3K JA 1/6W	1
R253	401 024 6700	CARBON 100 JA 1/6W	1
R254	401 024 6700	CARBON 100 JA 1/6W	1
R255	401 025 7102	CARBON 22 JA 1/6W	1
R256	401 025 7102	CARBON 22 JA 1/6W	1
R257	402 016 4506	FUSIBLE RES 10 J- 1/2W	1
R258	402 016 4506	FUSIBLE RES 10 J- 1/2W	1
R259	402 016 4506	FUSIBLE RES 10 J- 1/2W	1
R260	402 016 4803	FUSIBLE RES 27 J- 1/2W	1
R261	402 039 2800	FUSIBLE RES 10 JA 1/4W	1
R262	402 039 2800	FUSIBLE RES 10 JA 1/4W	1
R263	401 024 7400	CARBON 10K JA 1/6W	1
R264	401 027 8107	CARBON 82 JA 1/6W	1
R265	401 026 9907	CARBON 4.7K JA 1/6W	1
R267	401 016 3809	CARBON 2.2K JA 1/4W	1
R269	401 026 4605	CARBON 33K JA 1/6W	1
R270	401 026 4605	CARBON 33K JA 1/6W	1

ASSY,PCB,TRANS

32	620 201 7259	Assy,PCB,Trans	1
	620 017 2721	Fuse Clip	8
	620 022 2587	EC Terminal 1P	2
	⚠ 423 003 7201	FUSE 250V T0.5A	2
	⚠ 423 003 9809	FUSE 250V T0.63A	2
	620 200 0831	Assy,Connector-P,1P	2
	620 200 0817	Assy,Connector-S,6P	1

ASSY,PCB,SWITCH,POWER

33	620 201 3695	Assy,PCB,Switch,Power	1
	⚠ 620 015 2358	Power Switch	1
C1	⚠ 620 006 6679	Capacitor 0.01MF400V	1

ASSY,PCB,LAMP

34	620 200 0718	Assy,PCB,Lamp	1
	620 024 3636	Wire 2 Parallel	1
	620 030 7888	Lamp (8V 105mA)	2

Ref. No.	Part No.	Description	Q'ty
ASSY,PCB,DISPLAY			
35	620 200 0749	Assy,PCB,Display	1
	620 200 7540	Cushion,Rubber	2
	620 195 9628	Switch,Tact 160G	14
or	620 201 2353	Switch,Tact 160G	14
or	620 016 7819	Tact Switch 160G	14
	620 198 6259	Fluorescent TUBE12BT-26GK	1
	620 200 0787	Assy,Connector-S,8P	1
	620 200 0794	Assy,Connector-S,10P	1
	620 200 0800	Assy,Connector-S,12P	1
D801	407 008 0405	DIODE GMB01-BT	1
D802	407 008 0405	DIODE GMB01-BT	1
D803	407 008 0405	DIODE GMB01-BT	1
D804	407 008 0405	DIODE GMB01-BT	1

NOTES:

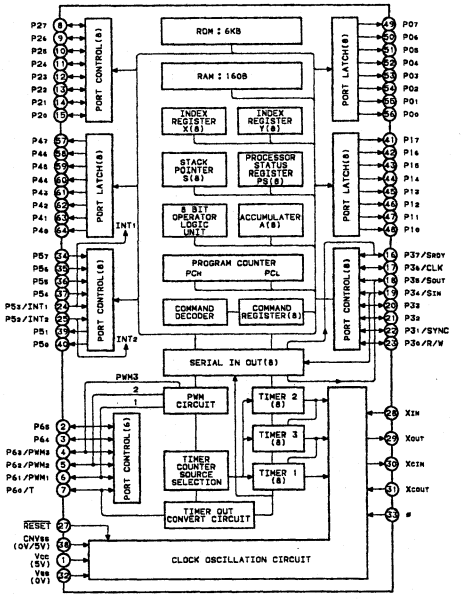
1. Parts order must contain Model Number, Part Number and Description.
2. Ordering quantity of screws and resistors must be multiple of 10 pcs.

PRODUCT SAFETY NOTICE

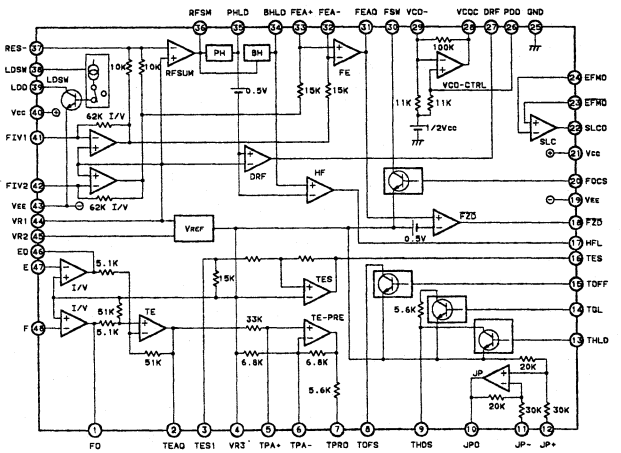
Each precaution in this manual should be followed during servicing. Components identified with the IEC symbol ⚠ in the parts list and the schematic diagram designate components in which safety can be of special significance. When replacing a component identified with ⚠, use only the replacement parts designated, or parts with the same ratings of resistance, wattage or voltage that are designated in the parts list in this manual. Leakage-current or resistance measurements must be made to determine that exposed parts are acceptably insulated from the supply circuit before returning the product to the customer.

IC BLOCK DIAGRAM

M50954-125SP BLOCK DIAGRAM

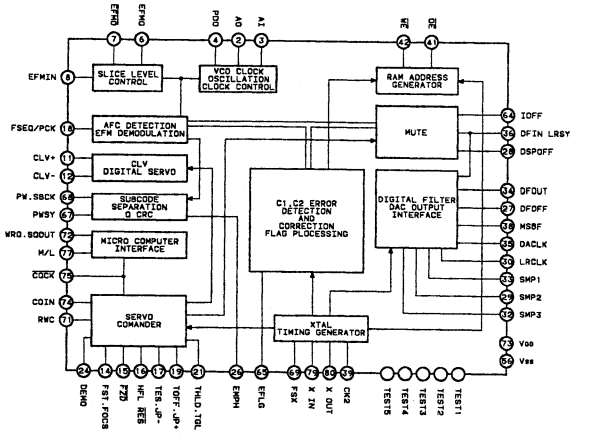


LA9200NM BLOCK DIAGRAM

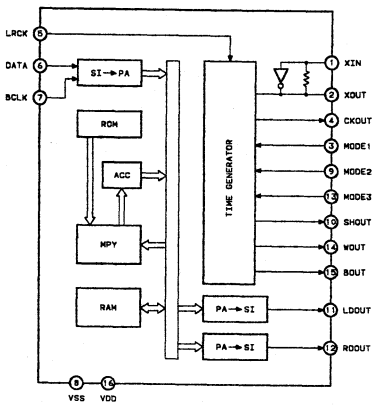


IC BLOCK DIAGRAM (Continued)

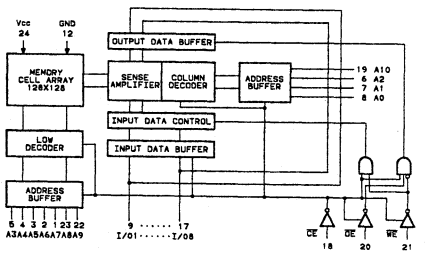
LC7860J BLOCK DIAGRAM



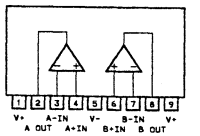
PD0050 BLOCK DIAGRAM



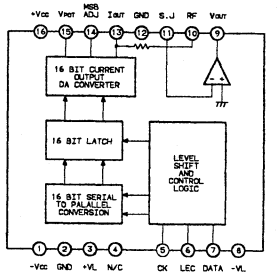
LC3517BS-15 BLOCK DIAGRAM



LA6458SS BLOCK DIAGRAM

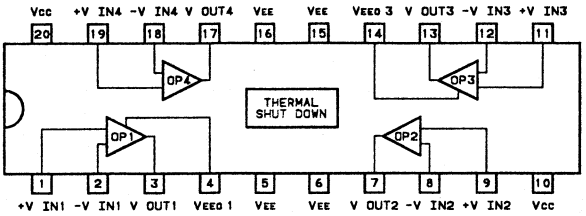


PCM56P BLOCK DIAGRAM

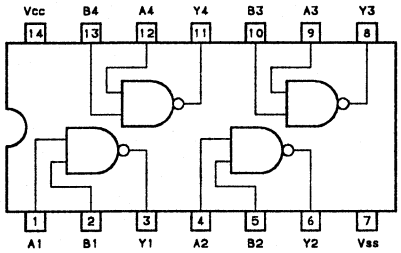


IC BLOCK DIAGRAM (Continued)

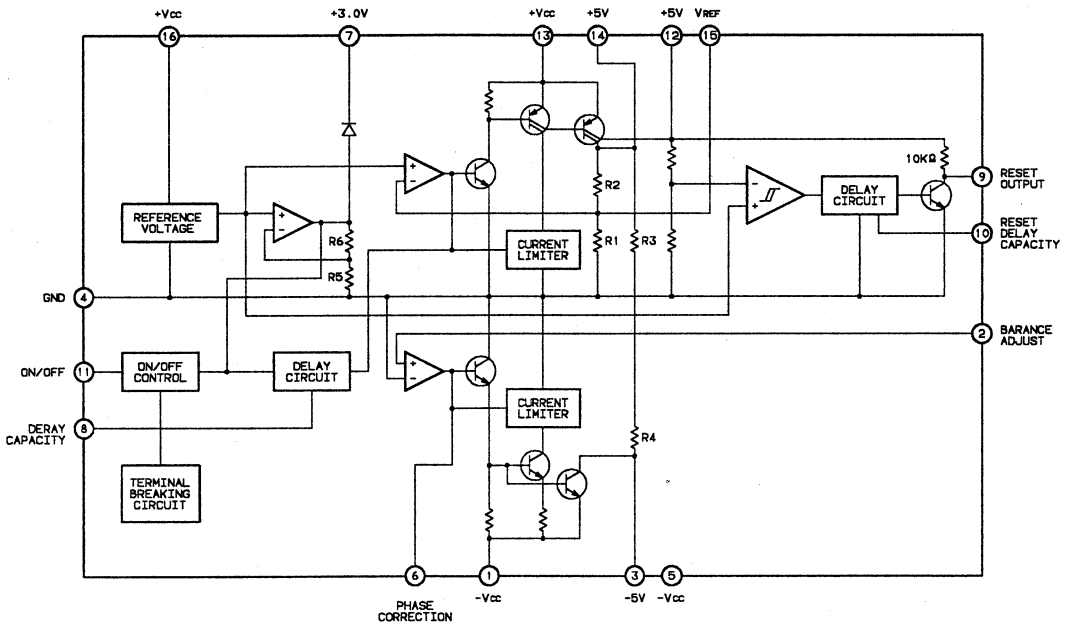
FA5205P BLOCK DIAGRAM


Vcc +V IN4 -V IN4 V OUT4 VEE VEE VEEO 3 V OUT3 -V IN3 +V IN3
20 19 18 17 16 15 14 13 12 11
OP4
OP3
THERMAL SHUT DOWN
OP1
OP2
1 2 3 4 5 6 7 8 9 10
+V IN1 -V IN1 V OUT1 VEEO 1 VEE VEE V OUT2 -V IN2 +V IN2 Vcc

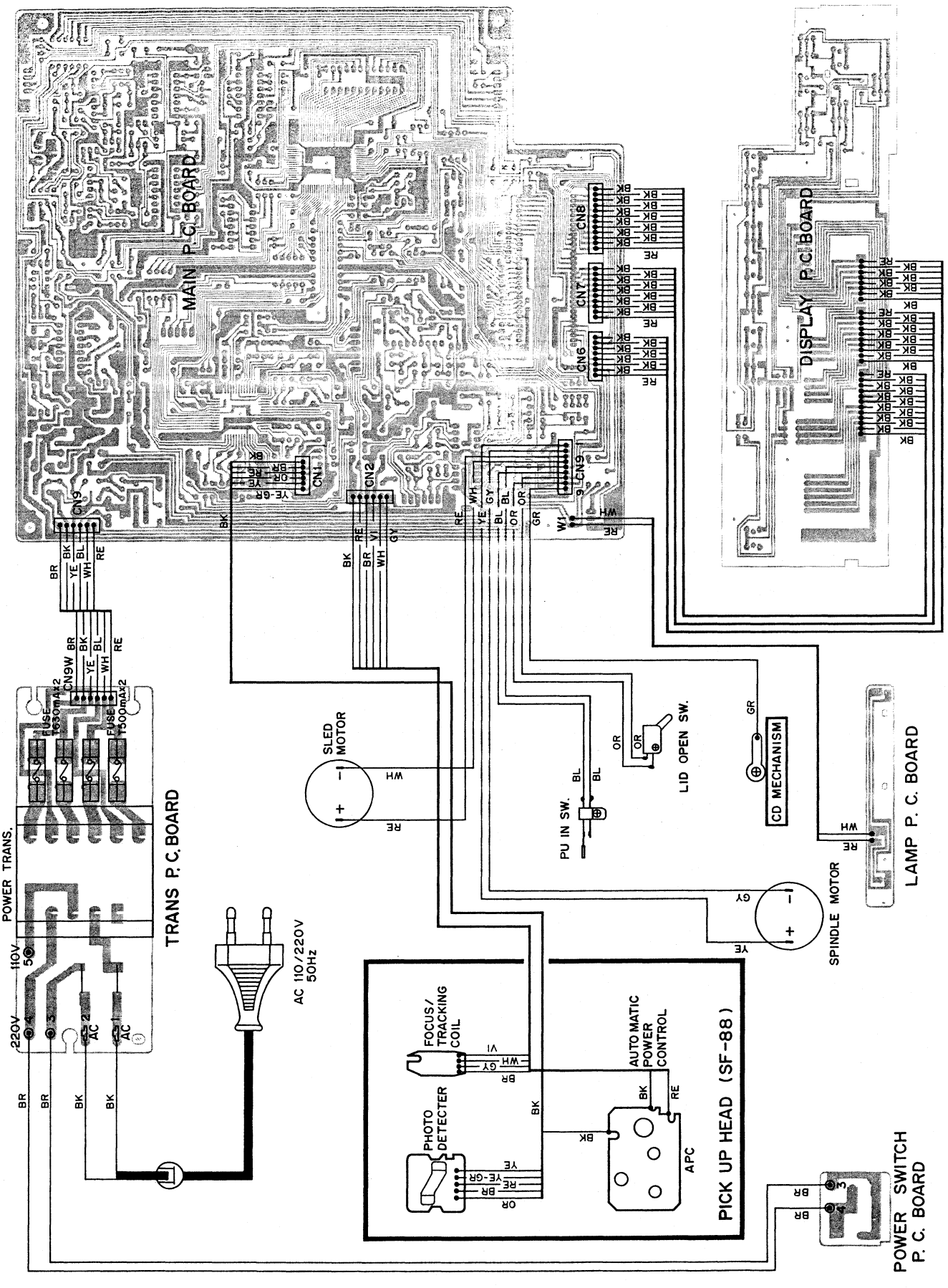
LC74HC00 BLOCK DIAGRAM



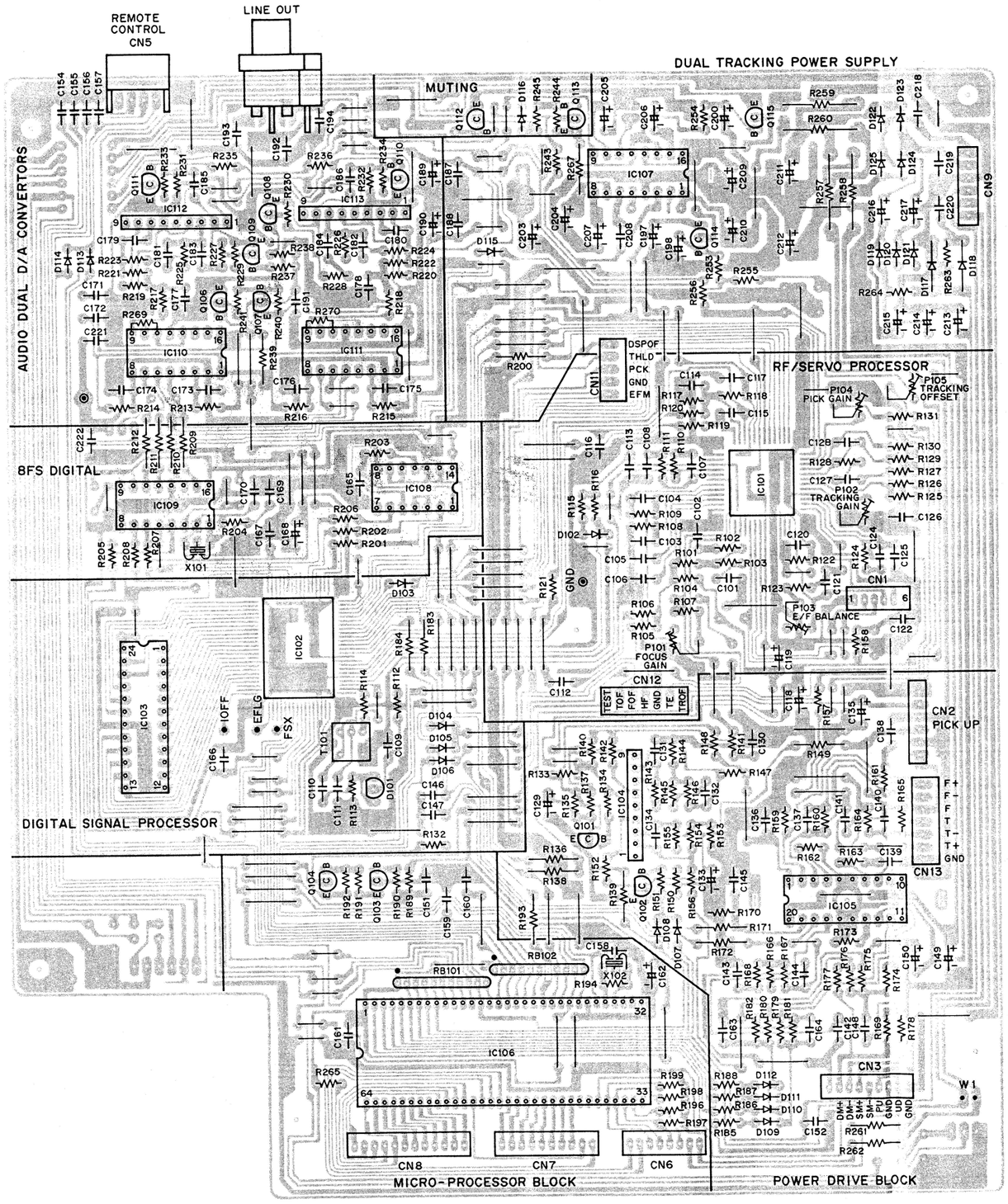
M5294P BLOCK DIAGRAM



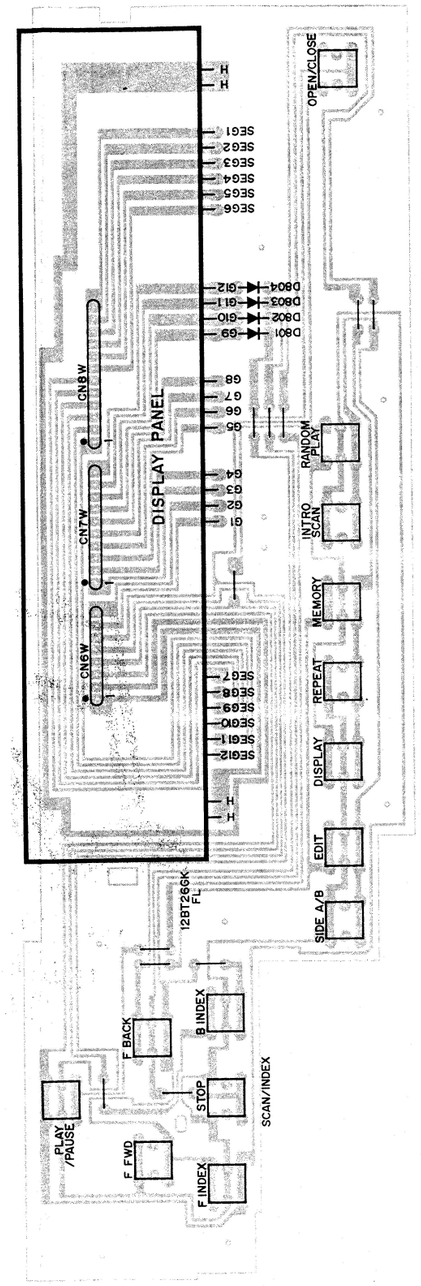
POINT TO POINT WIRING DIAGRAM

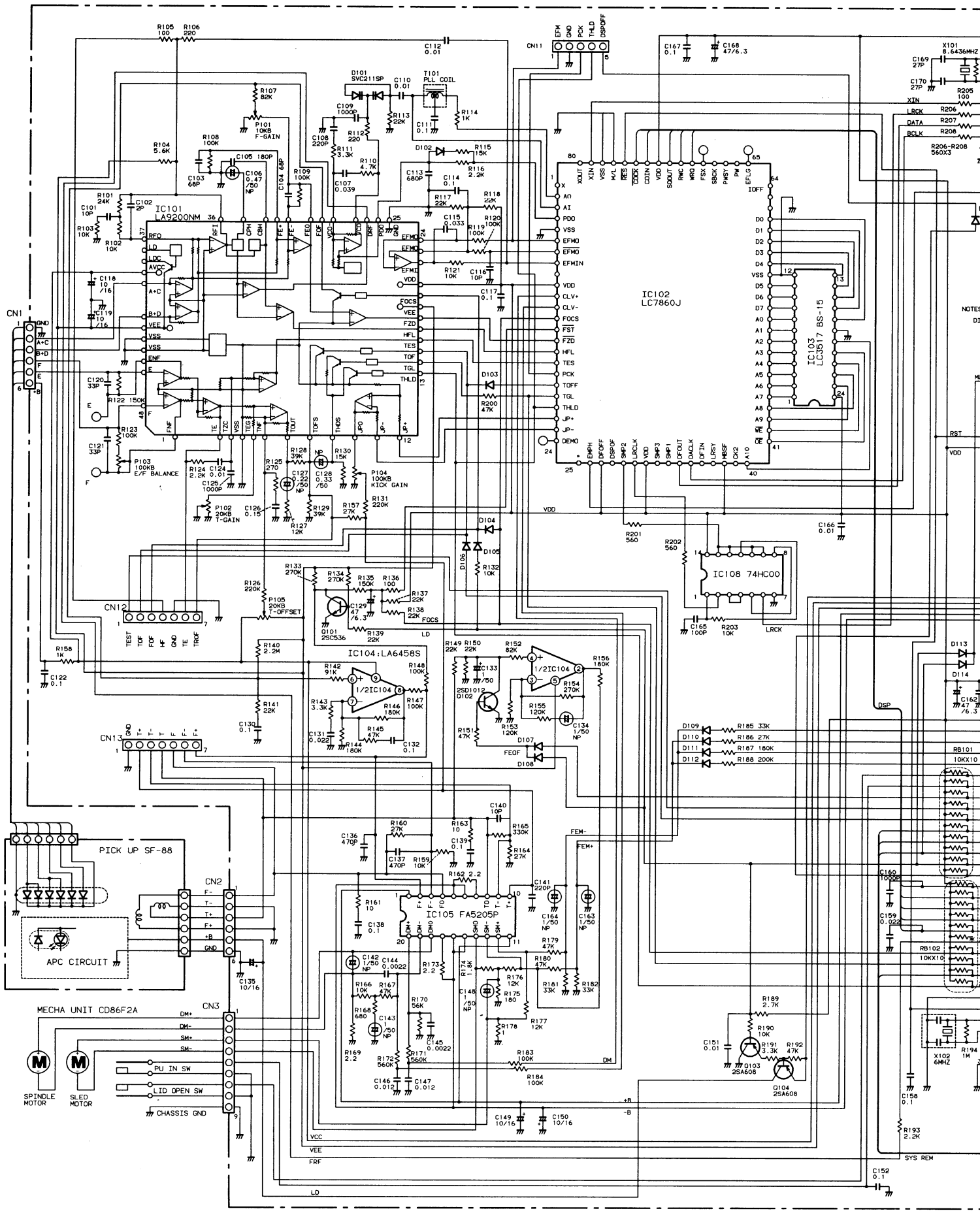


MAIN P.C.BOARD
(BOTTOM VIEW)

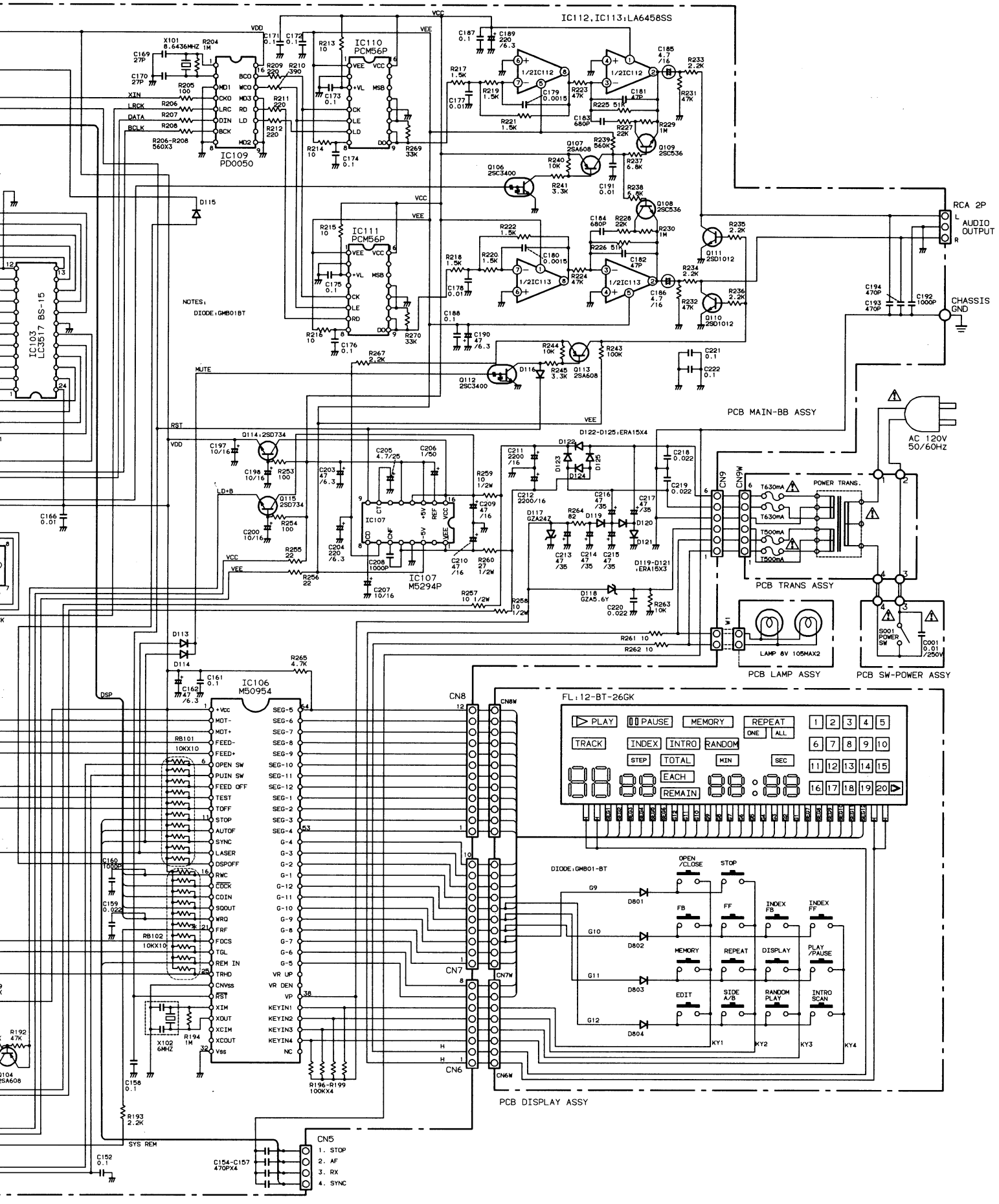


DISPLAY P.C.BOARD
(BOTTOM VIEW)

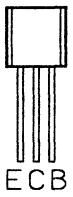
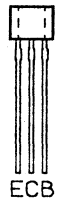
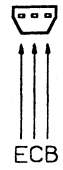



IC101
LA9200NM
IC102
LC7860J
IC103
LC3517 BS-15
IC104:LA6458S
IC105 FA5205P
IC108 74HC00
PICK UP SF-88
APC CIRCUIT
MECHA UNIT CD86F2A
SPINDLE MOTOR
SLED MOTOR
PU IN SW
LID OPEN SW
CHASSIS GND
CN1
CN2
CN3
CN11
CN12
CN13
P101 10KB F-GAIN
P102 20KB T-GAIN
P103 100KB E/F BALANCE
P104 100KB KICK GAIN
P105 20KB T-OFFSET
X101 8.6436MHZ
X102 6MHZ
RB101 10KX10
RB102 10KX10
D101 SVC211SP
T101 PLL COIL
D102
D103
D104
D105
D106
D107
D108
D109
D110
D111
D112
D113
D114
Q101 2SC536
Q102 2SD1012
Q103 2SA608
Q104 2SA608
VDD
VCC
VEE
FRF
LD
FOCS
FEOF
LRCK
DSP
SYS REM
RST
FEM+
FEM-
DM
+B
-B

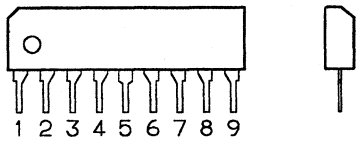
SCHEMATIC DIAGRAM



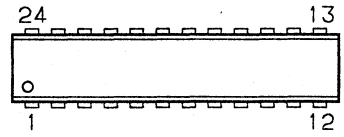
IC & TRANSISTOR LEAD IDENTIFICATION

TRANSISTOR	FRONT VIEW	BOTTOM VIEW	TRANSISTOR	FRONT VIEW	BOTTOM VIEW
2SD734			2SA608 2SC3400 2SC536 2SD1012		
TERMINAL NAME					
B → BASE C → COLLECTOR E → EMITTER					

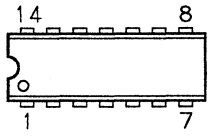
LA6458SS FRONT/SIDE VIEWS



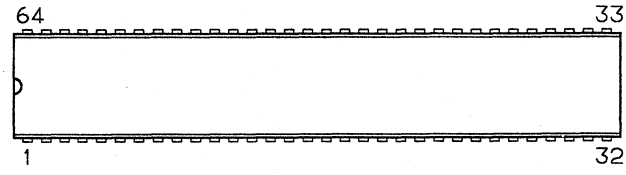
LC3517BS-15 TOP VIEW



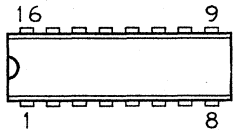
LC74HC00 TOP VIEW



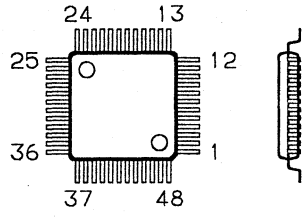
M50954-125SP TOP VIEW



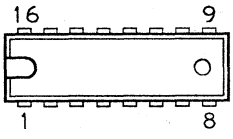
PCM56P TOP VIEW
PD0050 TOP VIEW



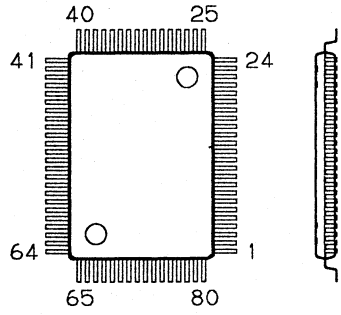
LA9200NM TOP/SIDE VIEWS



M5294P TOP VIEW



LC7860J TOP/SIDE VIEWS



FA5205P TOP VIEW